

(No Model.)

N. DIDIER.

TUYERE.

No. 252,305.

Patented Jan. 17, 1882.

Fig. 1.

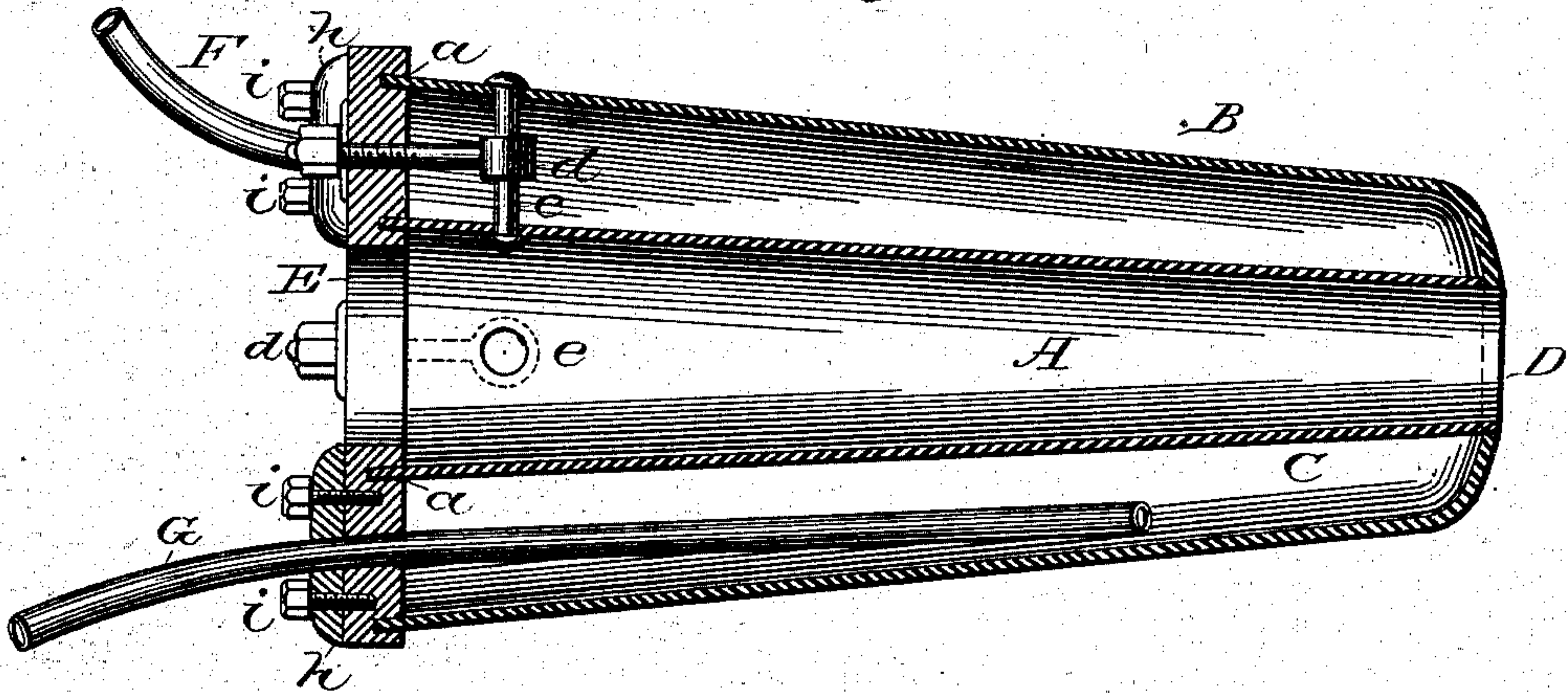
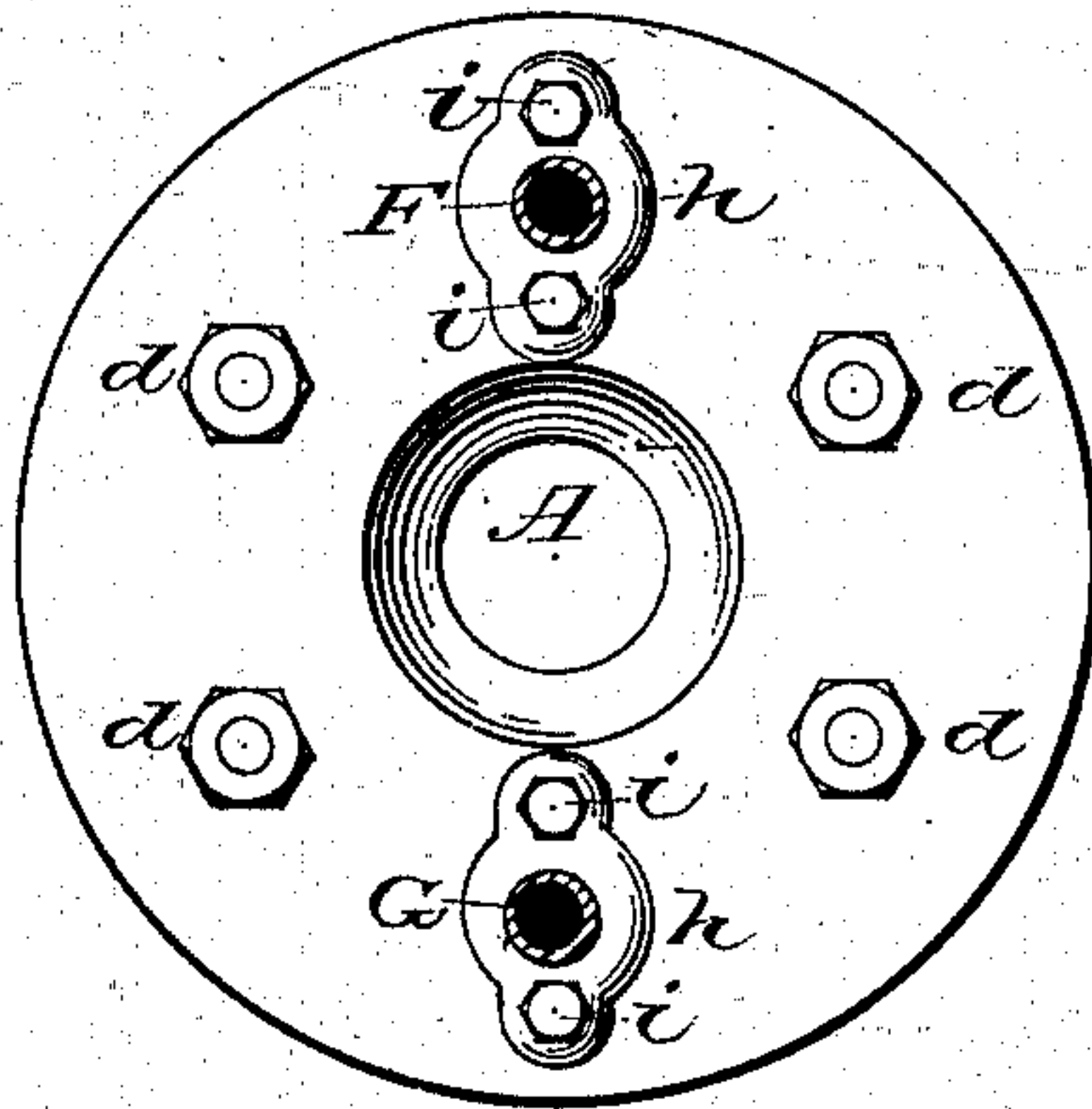


Fig. 2.



Witnesses:

Jonathan Ord.  
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# UNITED STATES PATENT OFFICE.

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## TUYERE.

SPECIFICATION forming part of Letters Patent No. 252,305, dated January 17, 1882.

Application filed August 10, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, NICOLAS DIDIER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have made a new and useful Improvement in Water-Tuyeres, intended for use in that class of furnaces wherein the fire is supplied with and urged by a forcible blast of air, of which the following is a specification.

To enable others to fully understand the construction of my improved tuyere, I will proceed to describe it by reference to the accompanying drawings, wherein—

Figure 1 represents a longitudinal central section of such a tuyere as is contemplated in my invention; Fig. 2, an outside view of the bottom or rear end.

To construct a tuyere in accordance with my invention I procure two sheets of copper and bend each into the form of a frustum of a cone, and bring about a perfect union of their respective long edges by the operation known as "brazing." The smallest, A, of these conical cylinders is to be arranged concentrically within the larger, B, by which an annular water-space, C, will be left between them. The outer shell being the longer, its smaller end is curved inwardly until its edge is in close contact with that of the inner cylinder, when the two are effectually brazed together, thus forming a solid convex nose, D, integral with the outer shell, and in consequence of the convex bending a gathering in and thickening of the metal take place, which materially stiffen, strengthen, and increase the durability of that part of the tuyere. The water-space C at the largest ends of these shells A B is closed by a circular or ring-shaped cap, E, having in its face two deep annular concentric grooves, *a a*, corresponding in position and size with the approximate ends of the respective shells, and into which they are fitted, and the joint made perfectly water-tight by means of suitable packing. To hold the cap E firmly to the shells, and in a manner that will admit of ready removal, it is requisite that the cap should be held by screws, and to this end, at regular intervals through the shells and their

intermediate water-space, I have inserted a number of radially-arranged short bars or strong rivets, *e e*, each passing through a properly-shaped eyebolt, *d*, the screw ends of which extend outwardly through the cap E, severally terminating in appropriate nuts.

The tuyere, as described, is provided with the usual supply and discharge pipes that pass through the cap into the water-space. In this case the outlet-pipe F simply enters the water-space, while the supply-pipe G is continued through such space to a point near the nose end of the tuyere. The proper position or relation of both of these pipes is maintained with respect to the face-plate E and other portions of the tuyere each by means of a surrounding flange, *h*, and intermediate packing by such binding-screws *i i* as are generally used in joints of this character.

The nature and object of water-tuyeres for use in furnaces being so well known and understood, no further description is herein deemed necessary, believing that I have made the construction of my improved tuyere sufficiently plain.

I claim—

1. The tuyere formed of two conical concentric thin sheet-copper shells with an annular water-space between them, in combination with a removable ring-shaped cap, E, held thereto by means of two or more eyebolts that enter such water space and connect each with an appropriate radially-arranged short bar or rivet, substantially in the manner shown and set forth.

2. A tuyere formed of two conical concentric thin sheet-copper shells, the outer one of which is curved inwardly at its smaller end and made to join the inner shell at that point, by which a convex nose is given the tuyere, as set forth.

3. A tuyere formed of two conical concentric thin sheet-copper shells, provided with a convex nose integral with the outer shell, and made thicker at the convex portion.

NICOLAS DIDIER.

Witnesses:

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